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DOES IT FIT? DRAWING LESSONS FROM DIFFERING LABOR PRACTICES

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ABSTRACT

We are attentive to labor practices in foreign lands but as the quotations above indicate, we are unsure about the lessons to be drawn from these practices. Will something that works `over there' work here, or will it fail to `fit' our ways of doing things? Which practices will adapt or evolve into something different in a different setting? Which may catalyse forces that will change our entire system of labor relations? This paper examines these questions regarding the fit or portability of labor relations across borders.

Analysing the interrelation of diverse labor practices within a country, much less across national lines, raises empirical and conceptual questions on the frontier of social science, if not beyond. There are issues about how national, company, or union policies actually operate at work places. There are issues about how to model the interactions among unions, firms and the government agencies that regulate labor relations. In this paper I make no pretence to having `solved' these complicated issues. Rather, my goal is to highlight some important aspects of the problem and to begin to develop a framework for thinking about them.

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Page

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> *"While it is not possible to import any given practice or institution found in another country to the United States neither is it advisable to ignore practices that work well in other settings."* Commission on the Future of Worker Management Relations, US, May 1994, Fact-finding Report.

> *"Foreign experience, particularly of successful countries like Germany and Japan, is useful and appropriate. But partial transplantation from a different system is a dangerous thing. (We) should tread warily about adopting fully systems which have been devised in the context of other legal frameworks and cultures ... A transplanted works council system would create difficulties for our system of exclusive bargaining representative status."* William Gould IV, Chairman, National Labor Relations Board, September 29, 1994.

> *"We cannot import a (labor) model from another country whose tradition of industrial relations is different from ours. Neither can we say they have nothing to teach us."* Bill Morris, Head, TWGU Union, UK, Financial Times, September 7, 1994.

Analysts and decision makers pay considerable attention to labor markets in other countries. Europeans look at the US employment record and wonder if deregulation of labor markets and flexibility, US style, could reduce European unemployment. Americans wonder what Japan does right and whether there is something to learn from European works councils or apprenticeships. Multinational firms ponder the effectiveness of the differing compensation and personnel practices in the countries in which they operate. Unions worry how labor practices and the standards of trading partners will affect labor relations in their country. Members of the European Union debate the effects of the Social Charter on their labor relations systems.

We are attentive to labor practices in foreign lands but as the quotations above indicate, we are unsure about the lessons to be drawn from these practices. Will something that works `over there' work here, or will it fail to `fit' our ways of doing things? Which practices will adapt or evolve into something different in a different setting? Which may catalyse forces that will change our entire system of labor relations?

This paper examines these questions regarding the fit or portability of labor relations across borders. My interest in this topic began with the National Bureau of Economic Research (NBER) project *Working Under Different Rules* -- a 4 year cross-country study of labor outcomes and practices in advanced OECD countries designed to illuminate US labor market problems and policies. Given the study's findings about what worked in other settings, what lessons could I or anyone else legitimately draw for the US? The importance of the portability issue was reinforced during the 1993-94 deliberations of the Commission on the Future of Worker-Management Relations -- a body set up by the Clinton Administration to recommend changes in

American labor relations -- on what the US could learn from foreign experiences in order to assess potential reforms in American labor laws and regulations.

Analysing the interrelation of diverse labor practices within a country, much less across national lines, raises empirical and conceptual questions on the frontier of social science, if not beyond. There are issues about how national, company, or union policies actually operate at work places. There are issues about how to model the interactions among unions, firms, and the government agencies that regulate labor relations. In this essay I make no pretence to having `solved' these complicated issues. Rather, my goal is to highlight some important aspects of the problem and to begin to develop a framework for thinking about them. To keep concrete issues in the forefront, I first summarise the findings of the *Working Under Different Rules* study and the lessons I drew from this study. Then I explore the issue of whether foreign practices can change an entire labor relations system. Finally, I sketch out an abstract framework for thinking about how different practices and institutions fit into labor relations systems.

1. What Works Overseas: The *Working Under Different Rules* Project

The *Working Under Different Rules* project was developed in response to the difficult time that American workers had from the mid-1970s through the mid-1990s. This was a period in which wage inequality grew and the real earnings of less skilled American men plummeted to the point where fully employed workers in the lower parts of the earnings distribution had living standards below those of comparably situated workers in Europe (Freeman, 1994, Chapter 1) and where many young men found crime more attractive than work. Child poverty rose and the US developed a seemingly permanent underclass of the homeless, and beggars. Unionism in the private sector declined, so that workers who believed their rights had been violated at workplaces flooded courts and regulatory agencies with suits and complaints.

While the US avoided European levels of unemployment and durations of joblessness, the difficulties of American workers suggested that the country might have something to learn from the labor market and social policies of other advanced countries (just as those countries had something to learn from American experiences). The project sought:

i) to determine whether other advanced countries had avoided some of the problems that faced workers in the US and if so, how;
ii) to see if their institutions and social protection policies affected labor market performance in important ways; and
iii) to assess which, if any, foreign experiences offered lessons for the design of US policy and institutions.

For four years, members of the NBER's Program in Labor Studies and researchers in Europe examined labor markets and income maintenance systems in the major developed countries. The result is five books in a new University of Chicago Press Comparative Labor Market series and the *Working Under Different Rules* overview volume.

In summary, what did we find?

With respect to the first goal, we found that many problems of American workers in the late 20th century were not endemic to advanced capitalist economies:

i. Other countries did not experience massive increases in wage differentials and inequality, nor drops in the real earnings of the less skilled: their problems were in employment and unemployment.

Wage inequality increased in Canada, Japan, and in some continental European countries as well as in the US, but by much less than in the US. Inequality barely changed in France and Italy, fell in the Netherlands and rose less in Sweden and Germany than in the US. The only country where the relative position of less skilled men fell as much as in the US was the UK, but low paid British workers realised modest increases in earnings in the 1980s. Only low paid American men had sizeable decreases in real wages. Nowhere did the ratio of the earnings of college graduates to the earnings of less educated workers rise as much as in the US. As is well known, Europe's labor market problems were low employment-population rates and long durations of joblessness.

ii. Loss of collective representation or employee voice was most severe in the US.

The drop in union representation of workers in the US meant that most Americans lack any independent worker-run institution of collective voice at the workplace. The American move to a union free private sector contrasts with the rough maintenance of union strength and continued role of collective bargaining in the country most similar to the US, Canada; and with the situation in continental Europe, where even in the face of falling union membership in several countries, workers maintain a collective voice within firms through legally mandated works councils or other institutions.

iii. Persons in the lower parts of the income or earnings distribution had lower standards of living in the US than in other advanced countries.

The fall in the real earnings of low wage Americans produced the anomalous situation in the 1990s in which low paid Americans had lower living standards (using purchasing power parity measures of the value of foreign currencies) than low paid workers in other advanced countries, despite America's overall high standard of living. A tenth decile worker in the US had roughly half the real compensation of a tenth decile worker in, say, Germany. Even compared to Canada, whose economic system is similar to that in America, low income Americans did poorly. From the 1970s to the mid-1980s the poverty rate in Canada went from above the American rate of poverty to substantially below the American rate. Homelessness was hard to find in Canada while it pervaded major US cities.

iv. Changes in the relative supply of workers by education contributed to differing trends in wage inequality.

In the US, the growth of the college educated work force decelerated greatly in the 1980s -- a direct response to the falling return to college of the 1970s. By contrast, Canada and the Netherlands continued to expand the number of college graduates relative to high school graduates in the 1980s. As a consequence, Canada had only modest increases in the college-high school wage differential, and the Netherlands had modestly declining wage differentials. In general, changes in the relative supplies of workers with given levels of education in a country greatly influence relative wages: a faster increase in the proportion of workers with college degrees resulted in a smaller increase in earnings differentials by education in the 1980s.

In addition to differences in labor market outcomes, the *Working Under Different Rules* project highlighted the variation in the institutions that govern the labor market. As per the project title, our research showed that indeed, people work under different rules, with different modes of compensation, forms of representation and job security in otherwise comparable capitalist economies. The American way of determining outcomes is characterised by the great reliance placed on the decentralised labor market and the low social safety net. As a result, market forces are more critical in determining the economic well being of Americans than in determining the well being of citizens of other advanced countries.

v. Institutional factors are important determinants of the change in wage inequality and in the skills attained and real earnings of low paid workers.

Countries with smaller increases in wage differentials than the US had three characteristics. First, they placed more emphasis on wage-setting institutions and less on pure market forces in determining pay than the US. Whether it is peak level collective bargaining between employer federations and union confederations; Ministry of Labor extension of contracts from collective bargaining to firms outside the bargaining set; or national minimum wages, virtually all European countries use some form of wage-setting institution to buttress wages at the lower part of the wage distribution. Second, many countries maintained the strength of unions or had smaller declines in unionization than the US. Unions kept a high membership in Germany, Canada and in Scandinavia; and unions in some countries with low density, such as Spain, or France, maintained sufficient support among workers to influence national policies. Third, some countries had more extensive training systems than the US. Japan used job rotation to give its employees a broad set of skills and linked its education system closely to employment in particular firms. Germany and Austria have extensive apprenticeship programs with national skill standards for students who do not go on to university.

vi. Countries that give workers greater training within firms than the US provide considerable institutional support for this training effort.

Worker training differs across countries in many ways. Some countries base their training systems largely on the firm. Others rely more on government training programs, or on school based or individual training decisions. Estimated returns to training for individuals in the form of wages and for firms in the form of productivity suggests that company based training has the highest payoff. Presumably, this is because it is linked more directly to the skills needed at the particular workplace. The US has a weak in-firm training system, with much of the training concentrated on high level workers rather than on raising the skills of the low paid. The experiences of Germany and Japan, the exemplars of in-firm training, show that considerable institutional structure is needed to induce firms to provide training for workers. In Germany, apprenticeship training is closely linked to schooling; employers pay much less for apprentices than for other workers; job security protections give employers an incentive to train; unions and works councils play a role in determining the content of training; and trainees must pass national skill tests. In Japan, lifetime employment practices in large firms provide an incentive to train: consensual decision-making within firms and the devolution of certain decisions to the shopfloor, enhances the need for a knowledgable work force.

vii. Labor laws and regulations affect modes of employee representation and participation in enterprises.

The development of works councils in Europe shows that labor laws can create socially accepted and workable institutions for employee representation within firms. The specific ways councils operate is largely driven by legal regulations: whether the council consists solely of worker representatives or includes management; whether different groups of workers have their own representatives; the power given to councils to affect outcomes; all these things differ, depending on national labor laws. In addition, even the modest differences in labor laws between the US and Canada -- the US requires secret ballot elections for representation, in which management is free to devote considerable resources to opposing unionisation, whereas Canada relies extensively on card checks that limit management's role and otherwise leaves the decision to unionise more to the workers -- appears to influence union strength between the two countries. What goes on in national legislatures and courts has an important effect on labor institutions because both employers and employees seek to obey laws and because laws give a weapon to the side whose rights are transgressed at the workplace.

viii. Differences in social protection policies affect poverty rates, at a major tax or budget cost.

Low earnings contribute to high rates of poverty in the US. But so too does the lower level of the American social safety net. Comparisons of the distributions of disposable income, which includes taxes and transfers and non-wage income, as well as labor market earnings, show that much of the higher rate of poverty in the US than in other advanced countries is attributable to differences in social protection policies, particularly for children. The contrast between social protection programs and poverty rates in Canada and the US is a case in point. Canadian unemployment benefits, family income maintenance programs and other welfare state programs are sufficiently stronger than American programs to produce a lower after-tax and transfer poverty rate in Canada, despite a higher before-tax poverty rate. The cost is a larger share of national output devoted to such transfers in Europe and Canada than in the US, which in turn requires greater rates of taxation and/or budget deficits. Sweden is, in this respect, the extreme case. It has the lowest rate of after-tax-and-transfer poverty among OECD countries and the most egalitarian distribution of disposable incomes. It also has the highest rate of government expenditure to GDP -- averaging 60% in the 1980s and 70% in the 1990s following the economic crisis that began then.

ix. Most social protection programs have modest side effects on the labor market; their primary affect is on well-being of the people they were designed to help.

Many social observers, unfamiliar with the weak evidence on the disincentive effects of the widely studied American welfare system, blame the extensive income maintenance systems and employment regulations of Western Europe for high unemployment. There are examples of poorly constructed programs, such as sick leave in Sweden, which adversely affected working time; and of unemployment insurance programs that extend periods of joblessness. However, our study found that in general these programs do not have major efficiency costs. One reason is that many programs require people to work in order to receive benefits. In Sweden you must have a job to take advantage of the sick leave policy, or to enjoy the benefits of extended vacation and holiday time, or to receive child care subsidies or parental leave benefits. Another reason is that firms or individuals find ways around some programs. In Spain, there is considerable noncompliance with high payroll taxes mandated to pay for health care; small firms evade those social security taxes. Since most Spanish workers have family members in a firm that pays the social security taxes however, virtually all Spaniards are covered by the health care system.

The project also found that market forces present economies with apparent `trade-offs' between some outcomes:

x. The 1980s cross-country experience is consistent with two market-driven trade-offs: one between employment and real wages; and one between employment and wage inequality.

Countries like the US with poor productivity and real wage growth had better employment performance than countries with greater productivity and real wage growth. By contrast, European countries with strong real wage growth had poorer employment performances. Except for Japan, no country managed to do well on both of these levels; and even Japan had economic problems in the 1990s. In addition, countries that maintained stable wage distributions had worse employment records than the US, which suggests a second possible trade-off -- between income inequality and employment of low skill workers.

Put differently, countries that maintained the earnings of the less skilled seemingly `paid' in terms of high unemployment; while the US `paid' for its growth of employment through falling real earnings. But the fact that low skilled and low paid American men had relatively poor employment prospects despite falling real wages and that wages tend to be lower in local labor markets with high unemployment shows that the low wage problem goes beyond the simple `trade-off' analysis.

2. Drawing Implications for the US

The final chapter of *Working Under Different Rules* draws lessons for the US from these conclusions about foreign experiences. I found this to be a difficult exercise. It was difficult because economics has no established framework for analysing the portability of foreign experiences across borders, much less a body of knowledge about their potential fit to the US. Still, I had to draw some lessons.

At a broad level, the finding that other advanced countries avoided massive rises in wage inequality and declining real earnings for low pay workers, reduced poverty more than the US, provided mechanisms for employee representation and cooperation with employers and in some cases provided better in-firm training for less educated workers produced one important lesson: **that the outcomes on which the US did poorly were not inexorable.** If every country had the same outcomes, despite different institutions, I would have been pessimistic about finding ways to improve results. There is no point in trying to accomplish the impossible, however desirable. Finding that other countries did better along some dimensions made it realistic to hope that the US can do better also.

The finding that one reason for differences in outcomes were differences in institutions and policies further suggested that **if the US could alter its labor market institutions and social policies, it might be able to improve on its outcomes in some areas.**

But the evidence of trade-offs in outcomes implied that **improvements in one area may be associated with worsened outcomes in others**, raising the question of whether by adopting foreign practices, one would simply be trading one set of problems for another. If the US added some elements of a European welfare state, for instance national health care, would it necessarily run into European employment problems, or could it find some way to avoid them? From the European perspective, would US style flexibility necessitate huge income inequality, increased poverty, homelessness, and the urban pathologies that mar American society, or could Europe find ways to avoid them? These considerations naturally led me to wonder what happens when a country adopts foreign labor practices: do these practices work the same, better or worse than they do overseas?

History provides a mixed record of success in transferring labor practices across country lines. Despite American efforts after World War II to introduce US style unionism in Japan and Germany, both countries developed their own distinct rules of the workplace and labor institutions. Canadian labor legislation partially copied the American Wagner Act, but with small differences that produced different levels of unionisation in the two countries half a century later. Japanese transplants to the US or Europe have imported some Japanese personnel practices, but not others. European efforts to increase the flexibility of their labor markets have had, at best, marginal success.

Given the problem of transferability, I limited the remaining lessons to three broad principles for the direction of possible public and private policy:

i. Reversing the decline in the living standards of less skilled workers and reducing poverty rates would require the US to supplement market forces in wage-determination and training as it has not done in the past.

Other advanced countries maintained the real earnings of the lower paid workers through better training and/or some form of institutional setting of wages. While a `better training' solution would be more consonant with American reliance on the market than institutional interventions in pay setting or income determination, the training systems that are exemplary require considerable institutional support. And training was only part of the reason for the narrower earnings distributions and higher real earnings of low skill workers in Europe than in the US. Wage-setting institutions such as national collective bargaining or minimum wages far above US levels were important in maintaining the labor market position of the less skilled, albeit presumably at the cost of some employment, in Europe.

Some of the ways foreign countries place lower bounds on the real earnings of their workers seemed `alien' to the US' decentralised labor market. I found it inconceivable that European style national collective bargaining or extension of labor contracts from some employers to their competitors would work in the US, outside of a mass mobilisation war environment. If the US chose to raise the wages of the less skilled through interventions in wage-setting, the methods for doing so would likely differ from European practices. For example, the Earned Income Tax Credit is a US intervention that supplements the pay of low-wage workers with a negative income tax, consonant with a decentralised wage-setting system. Attaching additional social benefits to work, such as health insurance paid partly by general tax funds, is another way to buttress the living standards of the low paid. Raising the minimum wage is another possible tool for intervention that fits US wage-setting practices.

ii. It is possible to reduce poverty through social safety nets that are largely complementary with work.

Other countries have more extensive social protection systems than the US, which greatly reduced their poverty rates. In contrast to the American welfare system, moreover, some foreign systems of social protection complement work. These programs offer an important lesson for designing policies to remove the welfare trap that reduces the work incentive for many Americans. At one time, some Americans viewed `workfare' as a conservative attack on income maintenance programs, but in fact workfare is the essence of the best welfare state and social protection programs in Europe. Programs that provide benefits for workers (such as France's state provided day-care for children of working mothers), or Sweden's benefits that accrue to employees, show that it is possible to design social protection programs that redistribute income and make work more attractive.

But, as with training and wage-setting, these programs require greater intervention in market determination of outcomes than has been the experience of the US and even a welfare system that complements work would cost money (for instance for child care or to offer wage subsidies to employers for hiring low skilled workers). No foreign country provides an extensive social safety net without allocating a larger share of national output for social protection than does the US. If the US wanted to improve the situation of the poor, it would have to pay.

iii. Providing collective representation and venues for participation for American workers will require new labor institutions and changes in labor law.

European and Canadian experiences show that legal regulation is a key element in giving employees a collective voice in firms; and that such institutions can create cooperative and productive labor relations. Canadian labor laws limit management pressures in union organising, suggesting to some labor relations experts that these practices be adopted in the US. But even Canada has moved in the health and safety area toward European-style work councils that cover non-union workers as well as union workers. One lesson from European experience is that intra-firm organisations should include all employees, not just the blue collar workers that are normally unionisable in the US. Both Europe and Canada mandate councils, which suggests that such organisation must be legally required. A more conservative reading of the evidence is that voluntarily established committees that have some legal standing, might better fit the American labor scene. Such committees would, however, need real power in, say, regulating occupational health and safety or dealing with grievances, obtaining information about company plans, or in joint consultation or decision making on, say, training. European experience further suggests that such institutions should not have rights to engage in wage-bargaining or call strikes.

The reader will note that rather than offering specific policy recommendations I limited my lessons to pointing out areas in which new policies were needed if the US were to resolve its problems. This is in keeping with the NBER charter, which forbids researchers from making policy recommendations in research studies. But even absenting that rule, I was uneasy about recommending any specific policy because of my uncertainty about how it would `fit' with other US labor practices. I was troubled for instance, by how European works councils would operate in the US absent industry-wide collective bargaining and a `social partners' tradition of decision making. Perhaps, as many American unionists feared, anti-union management would use these organisations as `company unions' (employer-dominated organisations designed to avoid unionisation). Perhaps these organisations would prove incompatible with exclusive bargaining representatives, (Gould, 1994). Or perhaps they would `mutate' into plant level wage-bargaining organisations in the decentralised US labor market, as many American business-folk feared.

Even in Europe, there are striking cases of the same policy having different effects in different settings. For instance, both Spain and Germany weakened employment protection laws in the 1980s, but whereas in Spain the legal change led firms to hire most new employees under temporary contracts, there was little change in German employment policies. The greater strength of unions and works councils and importance of apprenticeship in Germany meant that firms still choose to hire people under permanent contracts. Similarly, while all Western European countries (save for the UK and Eire) have some form of works council legislation, the mandated councils differ greatly depending on the national labor relations system into which it fits. In short, labor institutions and policies can work differently and produce different outcomes in different settings.

The title question of this essay, to which I had given only cursory thought when the *Working Under Different Rules* project began, loomed large at the conclusion of the study.

iv. The effect of foreign practices on national labor relations.

On March 14-15, 1994 the Commission on the Future of Worker-Management Relations[1] held a conference in Washington DC on `International Evidence'. This conference and ensuing discussions impressed upon me that business and labor leaders were concerned with another issue regarding foreign labor practices -- the possible effect that introducing such practices might have on the entire labor relations system.

As an example of this concern, consider what might happen to US labor relations if, by magic, the European practice of **extension of contracts** was introduced into the US. American firms would probably not oppose union organisation as strongly as they do: why spend resources fighting unions if you are going to pay the going union wage in any case? But they would probably form stronger employer associations to bargain with unions in pattern setting agreements. Unions might lose one of their organising appeals: why join a union if you are going to receive the going union wage in a non-union firm? They might also be more willing to strike in certain negotiations, since the outcomes would affect larger numbers of workers. Extension of contracts would reduce wage inequality among firms. But it might also induce growth of the underground economy. No one can say for certain what the ultimate effect of such a major innovation would be on the US labor relations system.

The problem is that labor relations in a country are the product of complex interactions among many decision makers: unions, various levels of management, employees and government regulators, each of whom adapts behaviour to the changing behaviour of the other players. Absent an understanding of these interactions -- of the complex adaptive system that constitutes labor relations -- no one can be sure of what might happen if a country introduces transplants from overseas. This leads both unions and management to be wary of foreign practices, or indeed, of any change in the status quo that does not clearly shift the balance of power in their direction. Since a major institutional innovation may alter a labor relations system in hard-to-predict directions, many participants in the Commission Hearings advocated caution, (Gould, 1994). Similarly, in the Hearings before the Commission, representatives of labor and management testified that no changes should be made to the Railway Labor Act that regulates railroads and air transportation and that no changes should be made to Section 8(a)(2) of the Wagner Act that prohibits company dominated unions, despite this provision making it potentially illegal for companies to discuss wages and working conditions with groups of non-union employees. The reason management and labor preferred the *status quo* was not that they failed to recognise problems in each area, but that each feared that efforts to resolve the problems might open a `Pandora's Box' of changes, that could change the entire labor relations system to their detriment at some future date.

3. Toward A Framework for Analysis

Standard industrial relations or labor economics analysis provides little guidance to answering questions about the fit of labor institutions across countries or about the effect of one institution on other institutions. While industrial relations experts have recognised, at least since John Dunlop's *Industrial Relations System* (1958), that unions, management and government agencies interact in complex systemic ways[2], they have produced almost no formal analysis of how a labor system fits together or how it changes over time. Labor economists have eschewed modelling systems in favour of analyses of individual decisions or outcomes.

In this section, I take a first step toward developing an analytic framework that should help us address the `does it fit?' issue. I formalise the concept of fit in a labor relation system and examine the relation among institutions within a system. The definitions and discussions are designed as prologue to a formal model of a labor relations system as a complex adaptive system, *vide* the non-linear dynamic systems analysis associated with the Sante Fe Institute.

Consider a society with institutions X and a second society with institutions Y. For simplicity, let X and Y be vectors with N components, each of which can take on the values 1 or 0, where 1 means the institution is operative in the country (its cell fires `on' in a neural net) and 0 means that it is not. For instance, one component might be centralised collective bargaining: 0 for the US and 1 for Austria. The vector of all the institutions produces an outcome defined by the function F, where higher values of F are more desirable. Now, assume institution I does not operate in X or Y, but can be introduced (turned on) at a fixed cost of C_I. With I = 1 output changes in both societies, say to X' and Y'. The **absolute** fit of I then depends on whether it raises or lowers F, given C_I.

Definition: I `fits' society X if $F(X') - C_I > F(X)$.

This makes fit depend on the net marginal product of I: if we rewrite F as output net of the cost of the additional institution, f, we have $f(X') - f(X) > 0$.

The **relative** fit of I in society X versus Y depends on whether I raises net output more or less in X compared to Y.

Definition: I makes a `better fit' in society X than in Y if $F(X') - C_I - F(X) > F(Y') - C_I - F(Y)$ ie if $F(X') - F(X) > F(Y') - F(Y)$.

Note that $C_I = 0$ in the society where I originated. Thus the gain from transplanting I to a foreign country must exceed the value of I in the original setting for I to be worthwhile. The imitator pays an entry fee for introducing the new institution whereas the initiator has already paid that cost.

The cost of introducing an institution aside, institution I makes a better fit in X than in Y if $F(X) < F(Y)$ -- that is, if whatever I does, X was less able to substitute for it with existing institutions or mechanisms than was Y. Put differently, I fits X more than Y the greater the `hole' it fills in society X than society Y. Finally, I will better fit X than Y when $F(X') > F(Y')$ -- that is, if I is a better absolute fit in X than in Y.

Since in this model the only difference between societies is in their vectors of institutions (I assume the same F for both), these definitions direct attention at how institutions interrelate as arguments in the output function. To illuminate the `does it fit?' question, we must examine the extent to which the contribution of one institution depends on the contribution of other institutions within a labor relations system.

At an abstract level Kauffman's (1989; 1993) NK model of rugged fitness landscapes offers a way to analyse the interrelation among elements in the X and Y vectors. His model, which builds on Sewell Wright's vision of biological fitness as represented by peaks and valleys in a fitness plane, analyses epistatic interactions among genes or proteins. Kauffman posits a system of N parts (institutions), each of which takes on a limited set of possible values and whose marginal product depends on the value of K other parts of the system. If $K = 0$, there are no interactions; independent innovations can bring the society to its peak. In this case, there is no value to a systemic analysis: it's every tub on its own bottom. At the other extreme, when $K = N-1$, every part of the system is linked to every other part and it is not possible to say anything without a systemic analysis. The same institution might improve output in X but reduce it in Y, depending on what else is there. For example, a system of devolving enforcement of occupational health and safety to workplaces might work if employees have independent organisations -- unions or works councils -- to participate in the process but might fail in their absence. The NK model treats all components or institutions similarly: no component has a larger or smaller effect than any other, though with $N < K-1$, neighbor components may interact directly while distant components do not. To examine situations in which some institutions have larger effects than others, or in which some have special links to others, requires additional structure. Economists interested in `high performance workplaces', whose success appears to require a set of interrelated institutional changes (Milgrom and Roberts, 1994), have begun to analyse the latter issue within firms. To apply their analysis to societies as a whole, consider two separate institutions, I_1 and I_2, absent from society X. If X introduces the first institution, output rises from F(X) to $F(X,I_1)$; if it introduces the second, output rises to $F(X,I_2)$. But neither of these institutions works to its full potential absent the other, so that $F(X,I_1)$ and $F(X,I_2)$ are only modestly higher than F(X). The real pay-off comes from bringing them in together. Milgrom and Roberts use the concept of super-modularity of the production process to formalise this:

Definition: F is super-modular when $F(X, I_1, I_2) - F(X) > F(X,I_1) - F(X) \quad F(X,I_2) - F(X)$. Here I_1 and I_2 are labelled complementary institutions.[3]

As an example of complementary institutions, consider national collective bargaining and a strong employers' federation. You cannot have successful national bargaining without an employers' association on one side of the table and a strong employers' federation may make little contribution to national output absent centralised collective bargaining.

An implication of this line of argumentation is that a set of interrelated programs will often have a greater chance of succeeding than a single program designed to resolve a given problem. Multiple programs can cause offsetting behavioral incentives, or can reinforce each other in ways that make the effect of several programs together differ from that of any program alone. The coexistence of public day-care centers, time limited welfare benefits and general family child allowances in France creates a much greater chance for moving single parents from welfare to work than would otherwise be the case. In the US the combination of a minimum wage and earned income tax credit may work better than either policy by itself.

One refinement of the super-modular notion may prove useful. In many situations of institutional change, changes in one institution or in one element of a given institution seems to reduce social output even though changes in the entire vector of institutions (all components of an institution) could lead the society to a higher peak in productivity space. The transition economies in Eastern Europe, for instance, have suffered major falls in output on their way to a market economy; New Zealand had troubles moving toward a freer market economy; and Sweden's effort to reform its welfare state and deregulate its economy has been more costly than anyone expected. It is not simply a matter that complementary institutions produce a beneficial interaction or synergy, but that introducing them separately may be costly. I shall call institutions with this characteristic, partner institutions:

Definition: I_1 and I_2 are partner institutions when $F(X, I_1, I_2) - F(X) > 0 > F(X,I_1) - F(X)$ {and $F(X,I_2) - F(X)$}.

Malleable and catalytic institutions

Thus far, I have taken institutions as fixed discrete factors -- 0-1 elements in a vector or on-off cells in a neural net. But unless they are extremely narrowly defined, institutions have internal structure that merit some attention. When we talk about the institution of an `employee involvement program', for instance, we want to include quality circles, teams, whether committees of employees are elected, or not, etc. The internal elements of particular institutions, moreover, are likely to be some adaptable or malleable to different environments and thus contribute to their fitting into the labor relations systems of different countries.

To formalise this notion, I represent an institution with a set of N elements, which for simplicity have values 0 and 1. Elements are defined so that the ideal or protocol institution would have a 1 for each element. Some of these elements must be 1 for the institution to function, they are **hard** components of the institution: if they are on, the institution is on. Other **adaptable** elements can be 1 or 0, depending on their environment, without turning I off. For example, for free unions to operate, workers must be able to control their representatives -- this is the hard component. But the particular way they do so may differ across societies; this is an adaptable part of the union institution. Formally:

Definition: Element n of I is adaptable if changing n from 1 to 0 in the protocol institution leaves I = 1.

We can expand on this by examining the effect on I of making n = 0 when some other elements are 0.[4]

Since an institution consists of N components, the malleability of the institution depends on the number of components that can be off while the institution functions:

Definition: The malleability of an institution is measured as the number of elements that can be 0 while I = 1.

Malleability tells us the extent to which an institution functions despite the `failure' of particular components; its redundancy, as it were. In a neural network, this would show up in the size of the basin of attraction of the institution. If vector (1,1,1) is the protocol institution -- leading to I = 1 but if vector (1,1,0) also produces I = 1, the third component of the institution would be adaptable. The greater the number of vectors that differ from the protocol but yield I = 1, the greater is institutional malleability.

Since malleable institutions have many flexible or adjustable features, they should transplant readily in foreign countries and thus are likely to be found in many labor relations systems. As a case in point consider works councils, which are found in different guises in Europe, depending on the overall labor relations system. Management has a major role in works councils in France whereas unions dominate councils in Germany. In some countries, all employees elect councillors; in others, blue collar and white collar employees elect separate representatives. In Germany, councils have co-determination powers; in other countries, they have the right for consultation only. I can envisage works councils working in the UK and even in the US, where 10 states have mandated, health and safety committees exist in 10 US states. By contrast, extension of collective contracts to non-union workers has fewer malleable components: either the government extends or it doesn't, and seems unworkable in the decentralised US or UK labor markets.

Note that by itself, malleability tells us nothing about the desirability of introducing an institution. Works councils might be malleable, but perhaps they would lower output in the US. Here we must go back to the fitness. Under plausible conditions, a more malleable institution may be a better fitting one as well, but the definitions are designed to allow the two characteristics to be orthogonal.

Taken together, fitness and malleability are designed to capture what many analysts mean when they say `I does/does not fit' across national lines: the degree to which institution I can adjust to that other setting and its potential productivity in that setting.

Finally, neither fitness nor malleability address the possible effect of introducing a new institution on existing institutions. The concept I want to introduce here is that of the **catalytic power** of an institution -- the extent to which that institution induces change in other institutions. An institution I may turn off/on another institution J or turn on/off some components of J. It may affect J directly -- I comes in and J stops -- or through a more complex set of interactions, by altering the longterm steady state of the labor relations system, for instance, by affecting other institutions. These considerations dictate the following definitions:

Definition: Institution I is **directly catalytic** with respect to J if DJ/DI >< 0 -- that is, if changing I from 0 to 1, or 1 to 0 causes J to change -- or with respect to element n of J if Dn/DI >< 0, where D is the difference operator -- all other institutions held fixed.

Definition: Institution I is **ultimately catalytic** with respect to J if DJ/DI >< 0 -- that is, if changing I from 0 to 1, or 1 to 0 causes J to change -- or with respect to element n of J if Dn/DI >< 0, all other institutions allowed to vary as well.

Looking at the entire labor relations system, a measure of the catalytic power of I would be the difference between the full vector of institutions when I = 1 and when I = 0.

In one sense, catalytic power is the flip side of malleability: catalysis reflects the effect of the new institution on existing institutions whereas malleability measures the effect of existing institutions on the new one. One way of thinking about malleability and catalytic power is in terms of something with which we all deal daily: our mates. A marriage is more likely to succeed if one/both parties are malleable -- that is, if they adjust to their partner. It also may succeed better if one partner has catalytic power and induces changes in the other. But a marriage is likely to see trouble if both partners are catalytic and neither is malleable. My guess is that in any plausible model, catalytic power and malleability will be, as is implicit in this example, inversely correlated, but note that there is nothing in the definition to insure this.

4. Conclusions

The definitions and discussion above are tentative first steps toward clarifying the meaning of a labor relations system and the fit of different institutions in a system -- issues that first struck me as important at the conclusion of the *Working Under Different Rules* project and were reinforced during the deliberations of the US Commission on the Future of Worker-Management Relations. My hope is that one can develop the concepts of fitness, malleability and catalytic power further in various ways and use them in formal models of systems of institutions that will further illuminate the `does it fit?' title question of this essay.

ENDNOTES

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1. The Clinton Administration established the Commission to examine US labor relations and make specific policy recommendations for i) encouraging new methods or institutions for improving work place productivity through labor-management cooperation and employee participation; ii) changing the legal framework and practices of collective bargaining to enhance cooperative behaviour, improve productivity, and reduce conflict and delay; and iii) to seek ways to increase the extent to which work-place problems are resolved by the parties themselves rather than through courts and regulatory bodies.

2. Dunlop defines an IR system as: "comprised of three groups of actors -- workers and their organisations, managers and their organisations and governmental agencies concerned with the work place and work community (who) ... interact within a specified environment comprised of three interrelated contexts: the technology, the product and factor markets or budgetary constraints and the power relations in the larger community and the derived status of the actors. An industrial relations system and its larger setting create an ideology ... regarding the interaction and roles of the actors that helps to bind the system together." (Dunlop, 1993, p.283.)

3. In continuous functions, this is nothing more than requiring positive cross-partial derivatives.

4. There are various ways to expand this definition, for instance, in terms of the contribution of pairs of institutions to the institution remaining in operation: maybe it takes element 1 or element 2 to be on and so forth.

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